

REMARKS

I. Introduction

By the present Amendment, claim 14 has been amended. No claims have been added or canceled. Accordingly, claims 1-17 remain pending in the application.

II. Office Action Summary

In the Office Action of September 16, 2005, claims 1, 2, and 14 were rejected under 35 USC §102(e) as being anticipated by U.S. Patent No. 6,404,498 issued to Maeda et al. ("Maeda"). This rejection is respectfully traversed.

The Examiner's indication that claims 7-9, 11, and 13 are allowed, and that claims 3-6, 10, 12, and 15-17 are allowable, is noted with appreciation.

III. Rejections under 35 USC §102

The Office Action rejects claims 1, 2, and 14 under 35 USC §102(e) as being anticipated by Maeda. With regards to this rejection, the Office Action indicates that Maeda discloses an illumination optical system, which illuminates light to an object under inspection, and a detection optical system, which detects light reflected from the object and converts the detected light into an image signal. The Office Action also alleges that Maeda discloses a spatial filter to selectively shield diffracted light patterns coming from a circuit pattern existing on the object by combining light-shielding points of minute dots state. Maeda is also relied upon for disclosing an arithmetic processing system which processes the image signal detected by the detection optical system and a monitor which observes foreign matters/defects based on a signal processed by the arithmetic processing system. Applicants respectfully disagree.

Independent claim 1 defines an inspection apparatus that comprises:

- an illumination optical system which illuminates light to an object under inspection;

- a detection optical system which detects light reflected from said object and converts the detected light into an image signal;

- a spatial filter which is provided in said detection optical system to selectively shield diffracted light pattern coming from a circuit pattern existing on the object by combining light-shielding points of minute dots state;

- an arithmetic processing system which processes the image signal detected by said detection optical system; and

- a monitor which observes foreign matters/defects based on a signal processed by said arithmetic processing system.

According to independent claim 1, the inspection apparatus includes an illumination optical system, a detection optical system, a spatial filter, an arithmetic processing system, and a monitor. The illumination optical system illuminates light to an object under inspection, while the detection optical system detects light reflected from the object and converts the detected light into an image signal. The spatial filter is provided for selectively shielding diffracted light patterns coming from a circuit pattern existing on the object by combining light-shielding points of minute dots state. The arithmetic processing system processes the image signal detected by the detection optical system, while the monitor observes foreign matters and/or defects based on a signal processed by the arithmetic processing system.

The Office Action alleges that Maeda discloses the features set forth in independent claim 1. In particular, the Office Action alleges that Maeda discloses a spatial filter and provides citations to various passages that allegedly support this feature. Review of the cited passages, however, has not revealed any disclosure or suggestion for a spatial filter as set forth in independent claim 1. More particularly, Maeda discloses a pattern detection method and apparatus for inspecting microfine

defects of a pattern on an inspected object. The apparatus disclosed by Maeda includes a pair of half-mirrors, an objective lens, a focusing lens, a zoom lens provided with an attenuation filter on a pupil plane conjugated with the pupil plane of the objective lens and two dimensional or one dimensional image sensors. See column 7, lines 3-8. The attenuation filter (38) of Maeda is used to attenuate the 0^{th} order diffraction light introduced into the pupil of the objective lens. See column 8, lines 30-33. Maeda further indicates that the 0^{th} order diffraction light can be prevented from being received by the image sensor by providing, for example, an attenuation filter for partly controlling the same light intensity as the masked element. The attenuation filter appears to be used for controlling quantities of the 0^{th} order diffraction light so as to correspond with a diaphragm of a camera. See Fig. 17. Maeda does not appear to provide any disclosure or suggestion for a spatial filter "which is provided in said detection optical system to selectively shield diffracted light patterns coming from a circuit pattern existing on the object by combining light-shielding points of minute dots state."

It is therefore respectfully submitted that independent claim 1 is allowable over the art of record.

Claim 2 depends from independent claim 1, and is therefore believed allowable for at least the reasons set forth above with respect to independent claim 1. In addition, this claim introduces novel elements, which independently render it patentable over the art of record.

As amended, independent claim 14 defines an inspection method that comprises the steps of:

- illuminating light on an object under inspection;
- detecting light reflected from said object and converting the detected light into an image signal by a detection optical system;

selectively shielding diffracted light patterns coming from repetitive circuit patterns existing on the object using a spatial filter provided in the detection optical system, said spatial filter combining light-shielding points of minute dots state;

arithmetically processing the image signal detected by said detection optical system; and

observing foreign matters/defects based on a signal derived from said arithmetic processing by a monitor.

The inspection method of independent claim 14 includes features that are somewhat similar to those recited in independent claim 1. For example, independent claim 14 includes a step of selectively shielding diffracted light patterns coming from repetitive circuit patterns that exist on the object using a spatial filter. The spatial filter is used to combine light-shielding points of minute dots state. As previously discussed with respect to independent claim 1, Maeda provides an attenuation filter for attenuating the 0^{th} order diffraction light, and not a spatial filter, as set forth in the claimed invention.

It is therefore respectfully submitted that independent claim 14 is allowable over the art of record.

IV. Conclusion

For the reasons stated above, it is respectfully submitted that all of the pending claims are now in condition for allowance. Therefore, the issuance of a Notice of Allowance is believed in order, and courteously solicited.

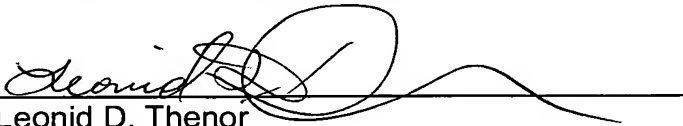
If the Examiner believes that there are any matters which can be resolved by way of either a personal or telephone interview, the Examiner is invited to contact Applicants' undersigned attorney at the number indicated below.

AUTHORIZATION

Applicants request any shortage or excess in fees in connection with the filing of this paper, including extension of time fees, and for which no other form of payment is offered, be charged or credited to Deposit Account No. 01-2135 (Case: 520.43302X00).

Respectfully submitted,

ANTONELLI, TERRY, STOUT & KRAUS, LLP.


Leonid D. Thenor
Registration No. 39,397

LDT/vvr
1300 N. Seventeenth Street
Suite 1800
Arlington, Virginia 22209
Tel: 703-312-6600
Fax: 703-312-6666

Dated: December 9, 2005